What is claimed is:

1. A pipe section which comprises a segment of polymeric material configured as a conduit having an end strengthened by a reinforcing structure formed integrally of said material around the periphery of said end, said structure including a portion which extends back away from said end.

2. A pipe section as defined in claim 1, wherein the reinforcing structure is formed at said end by turning the conduit material back over on itself.

3. A pipe section as defined in claim 1, wherein the hoop strength of said end is at least 10 pounds.

4. A pipe section as defined in claim 3, wherein the hoop strength of said end is at least 15 pounds.

5. A pipe section, which comprises a segment of polymeric material configured as a conduit with a corrugated wall, said conduit having an end portion which is flared, and which is strengthened by a reinforcing structure formed integrally of said material around the periphery of said end, said structure including a portion which extends back away from said end.

6. The pipe assembly of claim 5, wherein the flared portion flares at an angle of about 15° to 30° relative to the longitudinal axis of the conduit.

7. The pipe assembly of claim 6, wherein the angle is about 20°.

8. The pipe assembly of claim 5, wherein the flared portion includes at least one rigidifying crease structure, said

crease structure being annular and extending substantially around the flared portion.

9. A pipe section comprising:

inner and outer longitudinally extending generally tubular parisons each of high density polyethylene material and formed by extrusion, each parison having a respective substantially constant thickness throughout;

the inner parison comprising a substantially cylindrical longitudinally extending conduit having a passage therein for fluids to pass through the pipe section, said conduit having two longitudinal ends and an outer surface;

said outer parison comprising a corrugated structure surrounding the conduit and affixed to the outer surface thereof and a bell structure formed integral with the corrugated structure adjacent one of the ends of the conduit and projecting longitudinally outward therefrom;

said corrugated structure having a male connection structure secured adjacent the other end of the conduit, said bell structure forming a female connection structure configured to sealingly receive therein another male connection structure having a configuration substantially the same as said male connection of the pipe section;

the bell structure comprising:

a first flare section connected with the corrugated structure adjacent the associated end of the conduit and projecting longitudinally and radially outward therefrom, said flare section including a radially inwardly disposed generally

conical engagement surface tapering outwardly at an angle of about 1 to 10° and configured to sealingly engage said other male connection structure when placed in the bell structure;

a second flare portion formed integral with and projecting radially and longitudinally outwardly from an outer end portion of the first flare portion and tapering outwardly at an angle of about 15 to 30° for a distance of about 1 to 2 inches;

said second flare portion including a longitudinal terminal end portion of the bell structure, said terminal end portion defining in the female connection a generally circular end opening communicating with the passage in the conduit;

the terminal end portion including a reinforcement structure comprising

a first annular portion formed integral with the second flare portion and extending longitudinally outwardly therefrom;

a second annular portion formed integral with the first annular portion and extending radially outwardly therefrom;

a third annular portion formed integral with the second annular portion and extending longitudinally inward therefrom;

said reinforcing structure being formed by shaping the terminal end portion to turn back on itself so that the reinforcing structure has a channel or tubular cross-section.

10. A pipe assembly for accommodating fluid flow therethrough, which includes

a first pipe section comprising a length of polymeric material configured as a conduit and having a male end and a female end, said first pipe section's female end being flared and

being strengthened by a reinforcing structure formed integrally of said material around the periphery of said female end, said structure including a portion which extends back away from said end, and

a second pipe section comprising a length of polymeric material configured as a conduit and having a male end and a female end;

said male end of said second pipe section being in the female end of the first pipe section such that fluid may flow from one of said sections into the other.

11. A pipe assembly comprising:

first and second pipe sections;

the first pipe section comprising a longitudinally extending tubular first conduit portion having a longitudinal end and a female connection portion on said end, said female connection portion having a first opening therein and said conduit portion having a passage therein communicating with the first opening;

the second pipe section comprising a longitudinally extending tubular second conduit portion with a longitudinal end and a male connection portion on said end, said male connection having a second opening therein and the second conduit portion having a passage therein communicating with the second opening;

said female connection portion receiving the male connection portion therein so that the passage in the first pipe section communicates with the passage in the second pipe section

and so that fluid can move through the pipe assembly by passing through said conduit portions and said connection portions;

said female connection portion comprising a first connection portion connected with the end of the conduit portion and extending in a longitudinal direction therefrom, said female connection portion including a longitudinal annular terminal end portion extending around said first opening and including a first annular portion formed integral with the first connection portion and extending therefrom generally longitudinally outwardly of the first pipe section;

a second annular portion formed integral with the first annular portion and extending generally radially inwardly or outwardly from the first annular portion; and

a third annular portion formed integral with the second annular portion and extending longitudinally inwardly of the first pipe section therefrom;

said first, second and third annular portions together forming a generally circular reinforcement structure which strengthens the terminal end portion to preserve a circular shape thereof.

12. The pipe assembly of claim 11, wherein the first pipe section further comprises a corrugated outer structure, the first conduit portion having an outer surface, said corrugated outer structure surrounding and being affixed to said outer surface.

13. The pipe assembly of claim 12, wherein said corrugated outer structure is of the polymeric material, said corrugated outer structure being formed integral with said female connection

portion, the corrugated outer structure and the female connection portion having a substantially uniform thickness.

14. The pipe assembly of claim 11, wherein said first connection portion includes a flare portion adjacent the terminal edge portion, said flare portion flaring radially outwardly and longitudinally outwardly of the first pipe section, thereby facilitating alignment of the first and second pipe section during assembly of the pipe assembly.

15. The pipe assembly of claim 11, wherein said second annular portion extends radially inwardly from the first annular portion and supports the third annular portion radially inwardly of the first annular portion.

16. The pipe assembly of claim 11, wherein said second annular portion extends radially outwardly from the first annular portion and supports the third annular portion radially outwardly of the first annular portion.

17. The pipe assembly of claim 11, wherein the third annular portion has a terminal end directed longitudinally inwardly of the first pipe section.

18. The pipe assembly of claim 17 and

said first connection portion providing a radially inward facing engagement surface, and said male connection portion supporting thereon a gasket, said gasket engaging the engagement surface so as to substantially seal the connection between the male and female connection portions to resist escape of fluid from inside said pipe assembly; and

said first, second, and third annular portions being curvingly configured so that the terminal end portion of the female connection portion has no corners directed radially inwardly and longitudinally outwardly of the first pipe section that could contact and dislodge the resilient seal member from the male connection portion during assembly of the first and second pipe sections.

19. The pipe assembly of claim 11, wherein said polymeric material is high density polyethylene.

20. The pipe assembly of claim 12, wherein the corrugated outer structure and the first conduit portion are formed simultaneously by extrusion of thermoplastic material.

21. The pipe assembly of claim 11, and

said female connection portion being formed by extrusion of thermoplastic material.

22. A pipe section comprising:

a longitudinally extending tubular first conduit portion having a longitudinal end and a female connection portion on said end, said female connection portion having a first opening therein and said conduit portion having a passage therein communicating with the first opening;

the female connection portion being adapted to receive therein in said opening a male connection of a second pipe section;

said female connection portion being formed as an extrusion of polyethylene material having a substantially constant thickness throughout, said female connection portion comprising a

first connection portion connected with the end of the conduit portion and extending generally in a longitudinal direction therefrom, and an annular longitudinal terminal end portion extending around said first opening, said longitudinal terminal end portion including a generally annular reinforcement structure formed integral with and around the terminal edge portion, which reinforcement structure strengthens the terminal end portion to preserve the shape thereof and of the first opening.

23. The pipe section of claim 22, wherein the first pipe section further comprises a corrugated outer structure, the first conduit portion having an outer surface, said corrugated outer structure surrounding and being affixed to said outer surface.

24. The pipe section of claim 23, wherein said corrugated outer structure is extruded of polyethylene material, said corrugated outer structure being formed integral with said female connection portion.

25. The pipe section of claim 22, wherein said first connection portion includes an angulated flare portion supporting the terminal edge portion,s aid flare portion flaring radially outwardly and longitudinally outwardly of the first pipe section adjacent the terminal edge portion.

26. The pipe section of claim 25, wherein the flare portion flares at an angle of about 15° to 30° relative to the axis of the first conduit portion.

27. The pipe section of claim 26, wherein the flare portion flares at an angle of about 20° relative to the axis of the first conduit portion.

28. The pipe section of claim 25, wherein the flare portion includes at least one rigidifying crease structure, said crease structure being annular and extending substantially around the flare portion.

29. The pipe section of claim 25, wherein said reinforcement structure extends radially inwardly from the terminal end portion.

30. The pipe section of claim 25, wherein said reinforcement structure extends radially outwardly from the terminal end portion.

31. The pipe assembly of claim 21 and

said first connection portion providing a radially inward facing engagement surface adapted to engage a resilient sealing member supported on said male connection portion so as to substantially seal the connection between the male and female connection portions to resist escape of fluid from inside said pipe assembly and resist flow of external fluids into the pipe assembly; and

said reinforcement structure being curvingly configured so that the terminal end portion of the female connection portion has no corners directed radially inwardly and longitudinally outwardly of the first pipe section that could contact and dislodge the resilient seal member from the male connection portion during assembly of the first and second pipe sections.

32. The pipe assembly of claim 21, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is a channel shape.

33. The pipe assembly of claim 21, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is a U-shape.

34. The pipe assembly of claim 21, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is an arcuate shape of between 100° and 180°.

35. The pipe assembly of claim 21, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is a tubular configuration.

36. The pipe assembly of claim 21, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is an S-shape.

37. The pipe assembly of claim 21, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is that of a substantially solid bead of material.

38. A pipe assembly comprising:

a first pipe section;

the first pipe section comprising a longitudinally extending tubular first conduit portion having a longitudinal end and a female connection portion on said end, said female connection portion having a first opening therein and said conduit portion having a passage therein communicating with the first opening;

the female connection portion being adapted to receive therein in said opening a male connection of a second pipe section;

said female connection portion comprising

a first connection portion connected with the end of the conduit portion and extending generally in a longitudinal direction therefrom, and

a flare portion extending from the first connection portion and being angulated with respect thereto so that said flare portion tapers radially and longitudinally outwardly of the first connection portion;

said flare portion including an annular longitudinal terminal end portion distal to the conduit portion and extending around said first opening;

said longitudinal terminal end portion including a generally annular reinforcement structure formed integral therewith, which reinforcement structure strengthens the terminal end portion to preserve the shape thereof and of the first opening.

39. The pipe assembly of claim 38, wherein the first pipe section further comprises a corrugated outer structure, the first conduit portion having an outer surface, said corrugated outer structure surrounding and being affixed to said outer surface.

40. The pipe assembly of claim 39, wherein said corrugated outer structure and the female connection portion are extruded of polyethylene material, said corrugated outer structure being formed integral with said female connection portion.

41. The pipe assembly of claim 38, wherein the flare portion flares at an angle of about 15° to 30° relative to the axis of the first conduit portion.

42. The pipe assembly of claim 41, wherein the flare portion flares at an angle of about 20° relative to the axis of the first conduit portion.

43. The pipe assembly of claim 38, wherein the flare portion includes at least one rigidifying crease structure, said crease structure being annular and extending substantially around the flared portion.

44. The pipe assembly of claim 38, wherein said reinforcement structure extends radially inwardly from the terminal end portion.

45. The pipe assembly of claim 38, wherein said reinforcement structure extends radially outwardly from the terminal end portion.

46. The pipe assembly of claim 38, and

said first connection portion providing a radially inward facing engagement surface adapted to engage a resilient sealing member supported on said male connection portion so as to substantially seal the connection between the male and female connection portions to resist escape of fluid from inside said pipe assembly; and

said reinforcement structure being curvingly configured so that the terminal end portion of the female connection portion has no corners directed radially inwardly and longitudinally outwardly of the first pipe section that could contact and

dislodge the resilient seal member from the male connection portion during assembly of the first and second pipe sections.

47. The pipe assembly of claim 38, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is a channel shape.

48. The pipe assembly of claim 38, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is a U-shape.

49. The pipe assembly of claim 38, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is an arcuate shape of between about 100° and 180°.

50. The pipe assembly of claim 38, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is a tubular configuration.

51. The pipe assembly of claim 38, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is an S-shape.

52. The pipe assembly of claim 38, wherein the reinforcement structure has a cross section taken through the axis of the conduit portion which cross-section is that of a substantially solid bead of material.

53. A method of forming a pipe section, which comprises

subjecting an end of a segment of polymeric material configured as a conduit to conditions sufficient to render the material proximate such end plastic;

turning the plastic polymeric material at such end back away from the end to form an integral reinforcing structure.

54. A method of forming a pipe section, which comprises

subjecting an end of a segment of polymeric material configured as a conduit with a corrugated wall to conditions sufficient to render the material proximate said end plastic;

shaping the plastic polymeric material proximate said end into a flared portion;

turning the plastic material at the end of said flared portion back away from the end to form an integral reinforcing structure.

55. A process for extruding a pipe section, said process comprising:

continuously extruding a corrugated pipe extrusion of a polyethylene material, said extrusion comprising inner and outer parisons, said inner parison being a continuous cylinder having an interior passage and an outer surface, the outer parison having at least two corrugated structures and a bell portion therebetween extruded continuously, the corrugated structures each being affixed to the outer surface of the inner parison;

circumferentially cutting both parisons of said extrusion between said bell portion and one of the corrugated structures to produce a pipe segment having a single bell portion and a single corrugated structure;

circumferentially cutting said outer parison of the pipe segment in said bell portion and circumferentially cutting said inner parison adjacent the corrugated structure so that said bell portion has generally conical portion defining a concave opening in the bell portion communicating with the interior of the inner parison;

pressing said annular end portion in engagement with a mandrel, said mandrel engaging the end portion of the bell structure and re-shaping the conical portion to have a flare portion adjacent the annular end portion, said flare portion being generally conical and tapering outwardly at an angle of about 20°mm;

said engaging with the mandrel causing said annular end portion to turn back radially outward of the flare portion and form a lip structure having a general channel shaped cross-section on the end of the bell portion;

allowing the polyethylene material to set so that said lip structure reinforces said opening to retain a circular shape.

56. The method of claim 55 and further comprising

heating the terminal end portion of the bell structure prior to engagement with the mandrel.

57. The method of claim 56, and said mandrel being heated to heat the end of the bell structure.

58. A method of fabricating a pipe assembly, said method comprising:

forming a female connection portion for a pipe section from a polymeric material by extrusion, said pipe section including a

first tubular conduit portion having an interior passage therein and a longitudinal end with an opening communicating with the passage;

the female connection portion having a generally tubular end structure having a first connection portion for connection with the end of the conduit portion, said end structure having a longitudinal terminal portion distal from the first connection portion, said end structure having a substantially constant wall thickness;

heating the longitudinal terminal portion of the end structure to become plastic; and

pressing engagement between the longitudinal terminal portion and a mandrel, said mandrel being configured so that engagement of the mandrel with the end structure of the female connector portion causes the plastic terminal end portion of the female connector portion to form a reinforcing structure therein; and

causing the polymer material of the female connector portion to set so that said reinforcing structure reinforces said female connector portion retaining its shape.

59. The method of claim 55 and

said end structure being formed conical and extending flaringly outwardly from the first connection portion at an angle of about 1° to 10°.

60. The method of claim 59 and

said flare angle being about 5°.

61. The method of claim 58 and

said end structure being formed conical and extending flaringly outwardly from the first connection portion at an angle of about 15° to 30°.

62. The method of claim 61 and

said angle being about 20°.

63. The method of claim 58, and

said mandrel having a central body portion which extends in a first direction into said end structure and an annular pocket structure extending around said central body portion, said pocket structure having a first pocket portion projecting radially outwardly from the central body portion and a second pocket portion extending in said first direction and spaced radially outward of the central body portion, said first and second pocket portions and the central body portion defining therebetween an annular recess around the central body portion;

said terminal end portion being formed with reinforcing crease structures rigidifying the flared shape of the female connection portion.

64. The method of claim 63 and

said central body portion of the mandrel having a conical or frustoconical flaring surface adjacent the pocket structure, said flaring surface tapering inwardly away from the pocket structure so that said terminal end portion of the female connector portion is given an outwardly flared shape adjacent said reinforcing structure.

65. The method of claim 58 and

said polymer material being a thermoplastic.

66. The method of claim 65 and

said polymer material being high density polyethylene.

67. The method of claim 58 and

said heating of the terminal end portion being achieved by heating of the mandrel.

68. The method of claim 58 and

said heating of the terminal end portion being performed by a secondary heat source, and said mandrel being cooled to cause the setting of the material.

69. A method of fabricating a pipe assembly for accommodating fluid flow therethrough, said assembly including a first pipe section comprising a length of polymeric material configured as a conduit and having a male end and a female end, said female end being flared and being strengthened by a reinforcing structure formed integrally of said material around the periphery of said female end, said structure including a portion which extends back away from said end, and a second pipe section comprising a length of polymeric material configured as a conduit and having a male end and a female end, which method comprises

bringing the female end of said first pipe section and the male end of said second pipe section into approximate registration by inserting the male end of the second pipe into the reinforced flared female end of the first pipe section, and

connecting the male end of the second pipe section and the female end of the first pipe section when the two sections

are in alignment, such that fluid may flow from one of said sections into the other.

70. A method of fabricating a pipe assembly, said method comprising:

forming a pipe section from a polymeric material by extrusion, said pipe section including a first generally cylindrical conduit portion having an interior passage therein and longitudinal end with an opening communication with the passage, and a female connection portion on the end of the conduit portion, the female connection portion having a generally cylindrical or conical end structure connected with and extending from the end of the conduit portion, said conical end structure having a longitudinal terminal portion distal from the end of the conduit portion, said end structure having a substantially constant wall thickness; and

applying an annular bead of polymer material to said terminal end portion, said annular bead reinforcing said end portion to maintain a circular shape.

71. Apparatus for forming a reinforcing structure on an open end of a polymeric pipe section, which comprises

a mandrel having a wall for contacting said pipe section, said mandrel including a first portion wherein said wall is configured to be received in the open end of the pipe section, and another portion in which said wall extends outwardly of said first portion in arcuate fashion such that an annular pocket is formed;

means for holding said pipe section in an orientation such that it and said mandrel can be brought into contact, with the mandrel's first portion being that part of it first received in the opening at the end of the pipe section;

means for causing movement of the mandrel and the pipe section holding means relative to one another such that the mandrel and the pipe section come together with the mandrel's first portion being received by the opening at the end of the pipe section and thereafter the annular pocket of the third portion coming into contact with and deforming the end of the pipe section to form a reinforcing structure.

72. Apparatus as defined in claim 71, wherein said mandrel includes a second portion intermediate said first portion and said other portion, said second portion having a wall which flares outwardly in respect of said first portion such that when the second portion is brought into contact with the pipe section a part of said pipe section proximate the end is caused to flare outwardly.

73. The pipe assembly as defined in claim 31, wherein said connection resists flow of external fluids into the pipe assembly.